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## THE LAKES-TO-THE-GULF DEEP WATERWAY. II

### V. FREIGHT MOVEMENT BY WATER ON THE ROUTE

The present movement of freight by water on the Lakes-to-the-Gulf route is the chief consideration of this chapter. Other writers have shown the decline of river traffic on the Mississippi,<sup>1</sup> and it appears to be quite well known that the important commerce of former days has disappeared. The question that is uppermost in the minds of those giving thought to transportation on the Mississippi is: Will the river again become an important waterway? The freight movement is discussed for the several sections of the route, beginning at Chicago.

Table VIII shows the shipments and receipts of freight at the Port of Chicago for the calendar year 1910. The lake commerce of the port is divided between the two harbors.<sup>2</sup> The iron ore, which comprises approximately one-half the total weight of the shipments and receipts, is discharged almost entirely at the Calumet Harbor; while the general merchandise, the fruits and vegetables, and the lumber come largely to the Chicago Harbor.

The lake commerce of Chicago should be important for several reasons. Chicago is located on the route of dense traffic between the seaboard and the West, and the broad open waterway of the

<sup>1</sup> F. H. Dixon, *A Traffic History of the Mississippi River System*, National Waterways Commission, 1909, Doc. 11; *Transportation by Water in the United States*, Part II, Department of Commerce and Labor.

<sup>2</sup> The Chicago Harbor and the Calumet Harbor are included in the Port of Chicago.

Great Lakes lies parallel to this route. Half the iron ore of the globe is located south and west of Lake Superior, and again an open waterway links Chicago with the ore beds. The city obtains cheap coal, some of which comes via the lakes, and is therefore a great manufacturing center. And yet the lake commerce is scarcely more than 10,000,000 tons, one-half of which is a special commodity,

TABLE VIII  
LAKE COMMERCE OF CHICAGO,\* 1910

Receipts	Tons	Shipments	Tons
Iron ore.....	5,405,462	Corn.....	1,218,783
Coal, hard.....	1,001,718	Merchandise, unclassified.....	431,375
Merchandise, unclassified.....	724,868	Flour.....	281,399
Coal, soft.....	580,222	Wheat.....	275,145
Lumber.....	499,743	Oats.....	219,888
Salt.....	220,945	Mill stuff.....	205,608
Manufactured iron.....	107,788	Manufactured iron.....	43,720
Sugar.....	81,726	Oil.....	35,253
Shingles.....	45,279	Oil cake.....	15,802
Cement.....	45,078	Broom-corn.....	7,007
Wheat.....	44,190	Wool and hair.....	1,769
Green fruits and vegetables.....	20,057	Grass seed.....	892
Railroad ties.....	19,120	Barley.....	576
Lath.....	8,295	Hides and leather.....	388
Post.....	7,586	Pork.....	146
Wood.....	4,045		
Copper.....	3,344	Total.....	2,737,751
Telephone poles.....	3,203		
Rye.....	1,080		
Plaster.....	866		
Hides and leather.....	610		
Barley.....	450		
Wool and hair.....	440		
Total.....	8,826,105		

\* Exclusive of 1,770,984 tons of ore received at Gary. Statement furnished by Mr. John C. Ames, collector of customs. The various units of weight were changed to the uniform one of tons.

iron ore. No record of the total movement of freight at Chicago is kept. The shipments and receipts at St. Louis for 1910, however, were more than 50,000,000 tons; and the total movement of freight at Chicago for that year was probably more than 200,000,000 tons. The lake commerce was only one-twentieth as much. This shows that water commerce is not very important in comparison with rail traffic even at Chicago.

The main question in connection with the movement of freight

at the Port of Chicago is: How much of the traffic could be carried on the proposed waterway? Of the receipts, the largest item, iron ore, enters the lakes through the ports of Lakes Superior and Michigan. Would this ore be carried to Peoria, St. Louis, or other points for smelting? There are several reasons why this is not probable. (1) The ore can be delivered much more cheaply at Chicago than at other points on the proposed route, owing to the difficulty and expense of navigation on the Chicago River and the canals between Chicago and Peoria. (2) Coal is delivered at Chicago from the East by the lakes, by rail in competition with the lake lines, and from the fields of Illinois and Indiana. This gives Chicago coal made cheap by competition between the eastern and the western fields and between rail and water carriers. (3) Chicago is an important manufacturing center and has a large supply of labor. (4) The iron industry is already located here, and strong economic advantages would be necessary to draw it to other points. (5) The advantages of Chicago as a market and a distributing center are the best on the American continent. For these reasons it seems improbable that the ore entering the Port of Chicago would be carried on the proposed waterway.

With the exception of ore, the largest item in the receipts is coal from the Lake Erie ports. The amount is approximately one-tenth of the total receipts of coal at Chicago, but the proportion received by lake has steadily declined for the past twenty years. The consumption of lake coal is confined largely to deliveries near the harbors; and since the boats carry only a small part of the coal from the East to Chicago in competition with the railways, it is probable that they could not pay the expense of navigation through a tedious inland channel and carry coal as cheaply to Peoria or St. Louis as the railways do. Moreover, at St. Louis the all-river competition from the Monongahela fields would be met. The all-river haul via the Ohio River would be cheaper than a combination rail, lake, and river haul through Chicago. At present coal is received at St. Louis for gas-making purposes from the West Virginia fields, but for fuel purposes the railways supply the Illinois coal cheaper than the boats do from either the West Virginia or western Kentucky fields.

The miscellaneous freight received at Chicago consists largely of imports coming from the Atlantic seaboard by rail, the St. Lawrence River, or the Hudson and the Erie Canal; or of manufactures from the lake ports. The packet boats in carrying this freight would meet the difficulties of slow speed and high cost through the channels between Chicago and St. Louis. Moreover, the rail rates are almost the same on this freight from origin to St. Louis as to Chicago; and since the boats carry so small a proportion of the west-bound merchandise between the seaboard and Chicago, it is plain that they could carry much less through the inland channel to St. Louis, if indeed they could obtain any of this traffic.

The lumber that is received by boat finds its best market at Chicago, and probably none of it could bear the expense of being towed through the channel and be marketed to advantage at other points on the route.

A portion of the salt received by boat is shipped out by rail, but only a small part of it goes to river points, and the rail rates on salt are so low that it is problematical whether it could bear the expense of the tedious voyage through the channel with the attendant insurance and slow speed which would add greatly to the cost of the trip. It should also be borne in mind that the large lake freighters cannot navigate the Chicago River, and the smaller vessels would operate at higher cost on the lakes in competition with the larger boats.

Concerning the shipping of manufactured iron from Chicago via the proposed waterway, Mr. Frank T. Bentley, traffic manager for the Illinois Steel Company, stated to the writer that he could make no use whatever of the proposed route even if it were made twenty or more feet in depth. Mr. Bentley has charge of one of the largest lake fleets and is one of the ablest industrial traffic managers in the country.

The rates on sugar are less to St. Louis from New Orleans than to Chicago from the seaboard, and hence the sugar could not be carried to St. Louis. The grain would move to the Atlantic by lake rather than for 1,659 miles by river to the Gulf. The green fruits and vegetables from the east shore of Lake Michigan

bring better prices at Chicago than at other points on the proposed route.

The shipments from Chicago are largely grain and grain products and manufactures. The grain and products go east while a large portion of the manufactures goes to the ports of Lakes Michigan and Superior. The manufactures originate largely at Chicago and would not furnish freight for boat lines on the waterway; but a part of the grain originates along the route from St. Louis to Chicago. Could boat lines obtain this grain along the route, convey it through the proposed channel and the lakes, and thus save transshipment at Chicago from rail to boat line? Important boats must receive grain from elevators in large amounts. If they could do this at Peoria or St. Louis, the cost of collecting it at those points would be almost the same as at Chicago; and there would be little compensation for bringing the grain to Chicago through the locks and canals. If small vessels were used it would still be necessary to tranship to lake vessels at Chicago, or be at an economic disadvantage in competition with the large boats. It would also be cheaper to ship grain from St. Louis down stream via the Mississippi than up stream through locks and canals.

While the Sanitary and Ship Canal of Chicago was being constructed, it was predicted freely that a large commerce would be developed along the new channel. But thus far there has been no material increase in the commerce of the South Branch of the Chicago River, and there is no freight movement on the canal except an occasional flatboat of stone. This stone was excavated from the rock section of the canal and is used to construct breakwaters on the lake shore. Where there is no railway paralleling the shore the towing companies carry the stone. But where there is a railway paralleling the shore, the stone is carried by rail for a less charge than the towboat companies make for towing it through the Chicago River. That is, where the origin and destination are both competitive points even stone is carried more cheaply by rail. And to points of delivery in the city of Chicago other than on the lake and the river, the railways carry the stone.

Since July, 1910, there has been an open channel from Chicago

to the Mississippi through the Chicago River, the Sanitary Canal, the Illinois and Michigan Canal, and the Illinois River. Over this route for a number of years an important commerce passed between Chicago and Peoria. The waterway is as good now as it ever was, but not a commercial vessel has yet made a trip through it since it was opened in 1910. Although the channel will not accommodate important vessels, it was said at the time the bill requiring the channel to be opened was before the legislature that there was a boat company ready to begin operation on the route. The company has probably since learned that no freight can be obtained at rates high enough to meet the cost of operation. The distance rates in Illinois are so low that it is doubtful whether they would yield revenue enough for short hauls to meet the cost of loading and unloading. Railways parallel this route on both sides from Chicago almost to Joliet. From Joliet to La Salle there are several railways on and near the north bank of the canal, and others not very far from the south bank. And at every town there is a line crossing the canal. No important commerce could be developed on a waterway over this route under the conditions outlined above. This is true without regard to the dimensions of the channel. On the lower Mississippi where the channel is thirty feet in depth and of unlimited width, there is no important commerce between rail points. The river freight in the main is that which originates at, or is destined to, points within the levees or other non-rail points. On the stretch between Chicago and Peoria there is no territory shut in by levees, and every town is served by a railway. Moreover, on the lower Mississippi the boat lines maintain a minimum scale for class rates of 30 cents per hundred pounds on the first class for the shortest hauls, while the Illinois distance tariff sets a minimum of 7.5 cents on the same class, with a minimum of 1.8 cents on tenth class. In view of these traffic conditions, the expenditure of twenty or thirty millions of dollars by the state of Illinois for a waterway<sup>1</sup> appears to be unwarranted.

The freight movement on the Illinois River between Peoria, Ill., and St. Louis, Mo., is shown in Table IX.

<sup>1</sup> The writer has reference to the waterway as a freight carrier. Water power and related topics are excluded from consideration here.

Between Pekin, Ill., and Grafton, Ill., there is no railway closely paralleling any long stretch of the river, and few railways cross this section of the stream. Moreover, Calhoun County, which is served by no railway, furnishes the larger portion of the traffic shown in the table. If this section were as well served by rail as that between Chicago and Peoria, it is probable that the packet boat company now operating on it would be forced to retire before its

TABLE IX  
FREIGHT MOVEMENT ON THE ILLINOIS RIVER, 1910\*

	Locks		
	La Grange	Kampsville	Average
	Tons	Tons	Tons
Merchandise.....	2,762	6,166	4,464
Live stock.....	89	13,655	6,872
Grain.....	8,848	2,548	5,698
Apples.....	217	364	291
Logs.....	7,017	4,869	5,943
Shells.....	3,018	3,025	3,021
Staves.....	900	900	900
Totals.....	22,851	31,527	27,189

\* *Annual Report of the Chief of Engineers, 1910, p. 2168.*

more efficient competitors, the railways. As conditions are, the traffic is scarcely sufficient to maintain the single packet line operating on this section of the route, although there is a low-water depth of seven feet throughout the Illinois River south of Peoria.

Disregarding New Orleans, which is both an ocean port and a river port, St. Louis is the most important shipping point on the Mississippi River. At one time it was also the most typical river town. Its location on the middle Mississippi, with the Missouri and the Illinois rivers above and the Ohio and its tributaries below, and with 16,000 miles of navigable rivers accessible, would suggest that there, if anywhere, river traffic should continue to be of importance. Table X shows, however, that the river traffic has rapidly declined at St. Louis during recent years, and that rail traffic has increased so remarkably that the former is a mere bagatelle in comparison with the latter. In 1871 the total shipments and



receipts by river were more than one-half those by rail; while in 1910 they had decreased to 191,965 tons, while those by rail had increased to 51,726,135 tons. The river commerce decreased from approximately one-third of the total to less than four-tenths of 1 per cent of the shipments and receipts by river and by rail.

TABLE X

SHIPMENTS AND RECEIPTS OF FREIGHT IN TONS AT ST. LOUIS, BY RAIL AND BY RIVER  
FOR SPECIFIED YEARS 1871-1910\*

Year	Upper Mississippi River	Lower Mississippi River	Illinois River	Missouri River	Ohio River
1871.....	315,854	791,187	156,936	117,017	214,325
1875.....	294,325	495,255	172,465	55,260	275,830
1880.....	281,355	1,037,005	165,540	75,440	349,555
1885.....	165,740	559,800	85,695	27,205	150,725
1890.....	151,507	765,880	26,390	31,385	102,500
1895.....	108,950	480,245	37,640	8,775	35,440
1900.....	86,745	461,830	25,925	3,950	2,700
1905.....	56,920	142,815	14,950	8,285	125,755
1910.....	25,900	79,265	14,735	240	64,800

TABLE X—Continued

Year	Cumberland and Tennessee Rivers	Red, White, Arkansas, and Ouachita Rivers	Total by River	Total by Rail	Grand Total
1871.....	12,409	47,171	1,654,899	3,258,203	4,913,102
1875.....	7,905	1,580	1,302,620	4,534,220	5,836,840
1880.....	16,330	6,160	1,931,385	8,852,204	10,783,589
1885.....	19,325	4,750	1,013,240	10,301,301	11,314,541
1890.....	48,810	139,120	1,265,592	15,240,141	16,505,733
1895.....	41,110	100,025	812,185	15,838,671	16,650,856
1900.....	103,100	73,340	757,590	24,555,750	25,313,340
1905.....	20,490	1,210	370,425	39,141,663	39,512,088
1910.....	6,975	.....	191,965	51,726,135	51,918,100

\* Compiled from Frank High Dixon, *A Traffic History of the Mississippi River System*, 1909; *Annual Statements of Merchants' Exchange of St. Louis*, 1910.

Both engineers and economic writers have been insistent in calling attention to the view that there could be no large amount of river business for lack of freight to move, or for lack of the kind of freight that would seek the river. They have pointed to the traffic on the Rhine, and suggested that when the Mississippi Valley is as densely populated as the Rhine Valley, a great increase in traffic on the Mississippi may be expected. But the history of

the traffic movement at St. Louis, as shown in Table X, does not confirm this view. At every town of importance on the lower Mississippi the population and amount of freight handled have increased during this period, and yet there has been a rapid decrease in the amount of river business. The cause of the decline and the probability of a revival in river traffic will be discussed more in detail in connection with commodity rates in a later section of this study.

Beginning with 1901 the Mississippi River Commission has kept an annual record of the movement of commodities on the Mississippi between St. Louis and New Orleans by stretches. Each of the commodity items includes various specific articles, but the record is a very valuable one in the study of the movement of commodities on the river. Table XI shows the freight movement for the year 1910 in comparison with that of 1901. Both the shipments and receipts are included in the figures for each of the stretches, hence the actual amount of freight handled was much less than that shown. The record for 1901 was not complete, since it was the first. The movement of stone, gravel, and sand was not reported, and that of logs between Vicksburg and New Orleans was omitted; while if there was a movement of oil, it was probably included in the item of unclassified freight.

It may be seen from the table that the total decrease was so marked that the grand total in 1910 was scarcely more than one-third that of 1901, although the local movement of stone, gravel, and sand and of oil and logs increased remarkably. Of course the grand total magnifies the decrease absolutely but not relatively. The increase in the use of sand is due largely to the development of the manufacture of concrete and tile at Memphis, Greenville, and other points, and to the movement of gravel at Baton Rouge. The stone, sand, and gravel are carried on flatboats for short distances and constitute little more than harbor traffic. The increase in oil is due to the location of the plant of the Standard Oil Company at Baton Rouge, and the distribution of fuel oil by this plant to the sugar refineries and other industries south of Baton Rouge, as well as to the shipment of refined oil down the river in ocean tank barges.

It should be stated here, however, that one of the important factors in the decrease of the river business was the abandonment

TABLE XI

SHIPPING VIA THE MISSISSIPPI RIVER BETWEEN ST. LOUIS AND NEW ORLEANS FOR  
1910 COMPARED WITH 1901\*

		1901	1910	Decrease
Between  St. Louis and Cairo	Grain and its products . . . . .	137,954	16,981	120,973
	Cotton . . . . .	308	972	664†
	Cotton seed and its products . . . . .	.....	982	982†
	Live stock . . . . .	31,981	6,581	25,400
	Coal and coke . . . . .	80,950	113,673	32,723†
	Lumber . . . . .	94,704	5,786	88,918
	Logs . . . . .	37,600	44,555	6,955†
	Iron, steel, and metals . . . . .	29,122	188	28,934
	Groceries and provisions . . . . .	83,656	10,694	72,962
	Oil . . . . .	.....	35	35†
	Stone, gravel, and sand . . . . .	.....	45,314	45,314†
	Unclassified and miscellaneous freight . . . . .	67,573	43,998	23,575
Totals . . . . .		563,848	289,759	274,089
Cairo and Memphis	Grain and its products . . . . .	103,599	15,669	87,930
	Cotton . . . . .	13,047	13,815	168†
	Cotton seed and its products . . . . .	21,750	8,276	13,474
	Live stock . . . . .	1,903	3,780	1,877†
	Coal and coke . . . . .	1,359,462	508,696	850,766
	Lumber . . . . .	228,493	72,880	155,613
	Logs . . . . .	309,395	335,662	26,267†
	Iron, steel, and metals . . . . .	55,572	20,828	34,744
	Groceries and provisions . . . . .	37,340	17,211	20,129
	Oil . . . . .	.....	.....	.....
	Stone, gravel, and sand . . . . .	.....	21,481	21,481†
	Unclassified and miscellaneous freight . . . . .	175,141	20,897	154,244
Totals . . . . .		2,306,302	1,039,195	1,267,107
Memphis and Vicksburg	Grain and its products . . . . .	143,791	20,295	123,496
	Cotton . . . . .	49,533	20,770	28,783
	Cotton seed and its products . . . . .	39,855	26,743	13,112
	Live stock . . . . .	5,200	11,791	6,591†
	Coal and coke . . . . .	1,281,393	392,561	888,832
	Lumber . . . . .	55,747	59,378	3,631†
	Logs . . . . .	129,286	187,950	58,664†
	Iron, steel, and metals . . . . .	32,851	15,421	17,340
	Groceries and provisions . . . . .	74,221	34,560	39,661
	Oil . . . . .	.....	2,222	2,222†
	Stone, gravel, and sand . . . . .	.....	186,516	186,516†
	Unclassified and miscellaneous freight . . . . .	44,442	22,179	22,263
Totals . . . . .		1,856,319	980,386	875,933

TABLE XI—Continued

		1901	1910	Decrease
Between  Vicksburg and New Orleans	Grain and its products.....	112,314	28,470	83,844
	Cotton.....	71,925	6,578	64,347
	Cotton seed and its products....	60,936	10,339	49,597
	Live stock.....	2,954	1,846	1,108
	Coal and coke.....	1,225,970	364,559	861,411
	Lumber.....	37,359	14,903	22,456
	Logs.....	.....	71,538	71,538†
	Iron, steel, and metals.....	31,272	9,707	21,565
	Groceries and provisions.....	154,887	58,941	95,946†
	Oil.....	.....	223,984	223,984†
	Stone, gravel, and sand.....	.....	657,656	657,656†
	Unclassified and miscellaneous freight.....	137,557	81,709	55,848
	Totals.....	1,835,174	1,530,230	304,944
COLLECTION OF TOTALS				
	St. Louis and Cairo.....	653,848	289,759	274,089
	Cairo and Memphis.....	2,306,302	1,039,195	1,267,107
	Memphis and Vicksburg.....	1,856,339	980,386	875,953
	Vicksburg and New Orleans....	1,835,174	1,530,230	304,944
	Grand Total‡.....	6,561,663	3,839,570	2,722,093

\* *Annual Reports of the Mississippi River Commission, 1902 and 1911.*

† The dagger indicates that there has been an increase or that the movement was not reported in 1901.

‡ The grand total for the several stretches contains duplication but may be used for rough comparison.

of the river by the Mississippi Valley Transportation Company in 1904. This company in 1901 was operating between St. Louis and New Orleans a barge line which carried grain and miscellaneous freight. From 1904 to June, 1911, no barge line was operated between St. Louis and New Orleans. In June, 1911, the through traffic was revived by a new company under the old name, the Mississippi Valley Transportation Company. Six trips north bound and five south bound were made during 1911, and 6,110 tons of freight were carried north bound and 5,015 south bound. Since November, 1911, the company has ceased operations, and the St. Louis-Gulf Steel Barge Line is now (July, 1912) in the process of organization to succeed the Mississippi Valley Transportation Company. If the total movement of 11,125 tons were added to the 1910 statistics, the increase in the grand total would be only 44,500 tons (11,125 multiplied by 4, corresponding to the four stretches)

and the grand total would still be less than one-half that of 1901 notwithstanding the omissions of that year.<sup>1</sup>

On the section of the route between St. Louis and Cairo grain and grain products, live stock, lumber, iron and steel, groceries and provisions, and miscellaneous freight show important decreases. The important increases were coal, and stone, gravel, and sand.

Between Cairo and Memphis, the grain, cotton seed, coal, lumber, iron and steel, groceries, and miscellaneous freight show significant decreases; while live stock and stone, gravel, and sand show increases or were reported for the first time.

Between Memphis and Vicksburg, grain, cotton, cotton seed, coal, iron and steel, groceries, and miscellaneous freight show substantial decreases; while live stock, logs, and stone, gravel, and sand either show an increase or were reported for the first time.

Between Vicksburg and New Orleans, grain, cotton, cotton seed, live stock, coal, lumber, iron and steel, groceries, and miscellaneous freight show important decreases; while logs and oil, and stone, gravel, and sand were reported for the first time. The oil traffic is a new item which has been discussed above. Logs were carried in 1901 but were not reported.

Table XII shows the local nature of the river traffic between St. Louis and New Orleans for 1907. This was the year in which a larger tonnage was carried by American railways than in any preceding year, or for any one of the years immediately succeeding. The table was prepared by the special board of engineers in 1909 and is the only table showing the local nature of the traffic on the river. It shows that the traffic is largely received at waylandings and discharged at large cities, such as St. Louis, Memphis, Greenville, Vicksburg, Baton Rouge, and New Orleans; or is received at the cities for discharge at the landings. The amount of each commodity received and discharged at important stations and on the several sections of the route is shown. By following the several items down the columns, it is possible to get an excellent idea of the very limited amount of freight that is carried between the important rail centers such as St. Louis and Memphis, St. Louis and New Orleans, and Memphis and New Orleans.

<sup>1</sup> The statistics for the calendar year 1911 are to be available in July, 1912.

TABLE XII\*  
TONNAGE AND TRAFFIC OF THE MISSISSIPPI RIVER, ST. LOUIS TO NEW ORLEANS, CALENDAR YEAR 1907

RECEIPTS AND DELIVERIES AT PRINCIPAL POINTS AND WAY STATIONS											
Grain and Its Products	Cotton	Cotton Seed	Live Stock	Coal and Coke	Lumber	Logs	Iron, Steel and Metals	Groceries and Provisions	Oil	Stone, Gravel, and Sand	Unclassified and Miscellaneous
Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
<b>LOWER MISSISSIPPI, ST. LOUIS TO NEW ORLEANS</b>											
<b>DOWN STREAM</b>											
Received at St. Louis	2,782	.....	319	10	226	375	709	3,485	83	.....	34,863
Received between St. Louis and Cairo	10,392	.....	374	.....	78	19,800	.....	.....	.....	1,000	3,238
Discharged between St. Louis and Cairo	1,576	.....	549	.....	214	6,000	444	27,90	78	1,000	17,230
Discharged at Cairo	11,598	.....	153	10	90	14,175	208	755	5	.....	4,801
Received at Cairo	.....	8,201	.....	1,067,154	.....	.....	27,938	.....	.....	14,200	11,889
Received between Cairo and Memphis	1,000	.....	.....	4,000	8,292	170,980	.....	.....	.....	1,000	5,702
Discharged between Cairo and Memphis	1,000	1,002	.....	25,950	.....	37,000	676	.....	.....	1,000	107,30
Discharged at Memphis	.....	6,599	.....	205,825	8,292	133,986	9,290	.....	.....	1,000	15,347
Received at Memphis	13,094	.....	40	21,960	1,932	.....	2,774	.....	364	10,000	21,510
Received between Memphis and Vicksburg	3,594	8,534	2,173	10,520	573	218,000	358	2,940	108	878,294	4,123
Discharged between Memphis and Vicksburg	16,688	5,471	1,774	35,129	2,525	153,000	3,374	14,959	525	791,154	25,124
Discharged at Vicksburg	1,795	4,950	18	24,340	.....	65,000	4,754	304	7	100,000	279
Received at Vicksburg	410	483	520	.....	732	.....	.....	3,124	19	.....	9,157
Received between Vicksburg and New Orleans	19,254	29,562	762	52,200	21,712	167,007	450	43,510	101,497	138,351	90,952
Discharged between Vicksburg and New Orleans	770	1,467	1,130	116,200	1,119	87,007	500	15,200	70,028	3,200	21,824
Discharged at New Orleans	18,804	33,423	202	747,500	21,325	86,000	12,926	31,374	31,488	144,951	86,577
<b>UP STREAM</b>											
Received at New Orleans	6,989	.....	402	300	8,432	.....	2,125	27,101	86,749	.....	15,802
Received between New Orleans and Vicksburg	79	3,370	600	200	13,302	19,800	200	500	29,497	.....	14,894
Discharged between New Orleans and Vicksburg	7,068	2,489	1,002	500	724	5,000	2,325	22,052	112,636	.....	30,473
Discharged at Vicksburg	.....	881	.....	.....	.....	.....	.....	.....	.....	.....	100
Received at Vicksburg	3,946	54	102	50	1,840	.....	323	4,372	42	.....	3,363
Received between Vicksburg and Memphis	1,303	25,013	3,125	15	121,012	145,805	367	2,422	47	.....	9,174
Discharged between Vicksburg and Memphis	5,209	9,409	7,288	65	337	20,200	572	9,715	89	.....	7,928
Discharged at Memphis	40	16,558	1,272	.....	15,933	79,795	1,118	201	3,610	.....	4,732
Received at Memphis	.....	534	.....	.....	.....	1,800	.....	.....	.....	.....	13,013
Received between Memphis and Cairo	3,193	1,937	.....	.....	35,589	218,889	.....	.....	.....	.....	36,342
Discharged between Memphis and Cairo	.....	98	.....	.....	.....	11,000	.....	.....	.....	.....	5,748
Discharged at Cairo	3,103	572	.....	.....	161,718	231,389	.....	2,517	.....	.....	37,437
Received at Cairo	75	342	260	166,350	23,156	.....	.....	195	.....	.....	2,533
Received between Cairo and St. Louis	8,161	.....	10,114	.....	257	.....	30	700	4	.....	9,149
Discharged between Cairo and St. Louis	442	.....	28	.....	.....	.....	.....	35	.....	.....	975
Discharged at St. Louis	7,794	1,522	260	166,350	24,876	39,000	30	879	4	.....	15,877

\* Table from H. Doc. 39, 61st Cong., 1st sess., 1909.

Only three items are shown to have been carried in important amounts over long distances, namely: coal and coke, lumber, and iron, steel, and metals. The coal originates on the Monongahela River, the iron in the vicinity of Pittsburgh, and the lumber largely at mills on the Yazoo and Sunflower rivers. Except iron, these commodities originate at non-rail points.

Coal is the one commodity that is still shipped in large volume for long distances on the lower Mississippi River. As shown in the table, in 1907, 1,067,154 tons were borne into the Mississippi at Cairo and 747,500 tons were carried to New Orleans. In 1910, however, only 364,559 tons were carried past Vicksburg. A large portion of the river coal was formerly consumed by the sugar factories on the river, by the ocean and river vessels at New Orleans, and, for engine fuel, by the railways west of New Orleans. The Standard Oil Company now supplies fuel oil to the sugar refineries; the western roads also use oil largely as fuel, and the ocean vessels are beginning to use Alabama coal and oil instead of river coal. These changes will probably be permanent, and in the future the Pittsburgh coal will find only a limited demand on the lower Mississippi.

Lumber is also carried over long distances in significant amount. The table shows that 121,012 tons were received between Vicksburg and Memphis and borne largely to Cairo and vicinity and to St. Louis. It is received largely from mills on the Yazoo and Sunflower rivers, which are not served by rail connections. If spurs were extended to these mills, it is probable there would no longer be a very important river traffic in lumber for long distances. In 1910, only 59,378 tons were carried between Vicksburg and Memphis. That is, the receipts and shipments on the entire stretch were less than half the amount received between Vicksburg and Memphis in 1907 for the up-stream movement. There is a large shipment of lumber from Vicksburg proper to and through Cairo, and it is carried by rail exclusively.

From the Ohio River to cities on the lower Mississippi 27,938 tons of iron, steel, and metals were conveyed in 1907; and 12,926 tons were carried as far as New Orleans. This traffic has since declined remarkably as shown in Table XI. Of course there was

no packet line in operation in 1907 between St. Louis and New Orleans or between Memphis and New Orleans. The railways carried the freight between these large centers.

It is a most interesting experiment that the new barge line is now (1911-12) making in regard to the ability of boat lines to compete with railways between these large cities. Here is one of the best river channels on the globe, and a large traffic is carried parallel to it by the railways. Barges have been found more economical as freight carriers on rivers than any other water craft, and they do not require more water than is now afforded by the Mississippi between St. Louis and New Orleans. The new barge employed in 1911 is of the most modern type of steel barge having water-tight compartments, steel hull, and its own loading machinery. Here in this open river of adequate depth, where high barge speed can be made, is the most favorable opportunity that can be given river craft for carrying traffic in competition with railways. The railways must publish their rates and give thirty days' notice of changes, and if they lower rates to meet water competition they cannot raise them again without first showing before the commission that the raise should be made on other grounds than the elimination of competition. This provision together with the application of the long-and-short-haul clause gives the water carrier, which is not required to publish its rates, an excellent opportunity to obtain competitive traffic. If an important traffic cannot be developed between St. Louis and New Orleans, it would seem unnecessary to expend a large sum to construct a much less efficient channel, made up of locks and canals on which wide barge fleets cannot be operated and narrow ones must make slow speed, between St. Louis and Chicago.

However, the writer does not believe the new barge line will have all smooth sailing even on the lower Mississippi. The old company had an established trade in grain down stream and elevators at St. Louis sufficient to contain a large cargo. This down-stream freight was largest in bulk and least expensive to carry. In fact the grain traffic was the chief source of revenue. But as the railways extended through routes to the south, the barge line found its traffic decreasing so rapidly that it was forced to abandon the



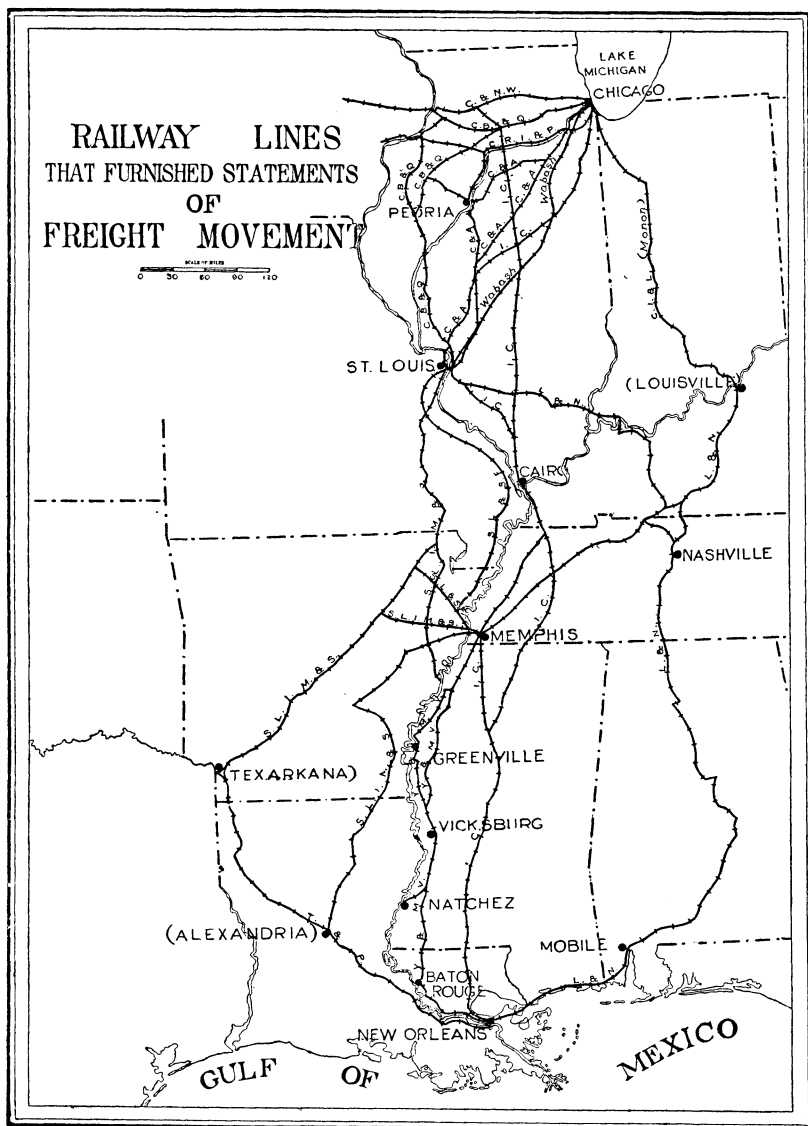
through traffic between St. Louis and New Orleans. The new line has some advantages over the old one, as shown above, but it also has serious handicaps that the old line did not have. The river elevators are gone, the railways and the farmers have located elevators on the farms and at important rail junctions, and the railways have greatly increased their efficiency since 1903. Spurs have been laid for almost every important farmer, and large cars are frequently used instead of granaries in which to put grain, which goes to the Atlantic or Gulf ports without breaking bulk. With the most important traffic of the old line apparently irretrievably lost, the possibility of building up a new traffic of miscellaneous freight is the only hope of success for the new line.

#### VI. FREIGHT MOVEMENT VIA THE MORE IMPORTANT RAILWAYS PARALLEL TO THE PROPOSED WATERWAY

The present rail traffic between the larger river towns and cities has been studied at first hand in an attempt to ascertain what freight would probably be shipped by the proposed deep waterway. Statements of freight movement have been received from the most important carriers<sup>1</sup> along the route, and have been merged and tabulated. Table XIII shows the freight movement included, and the accompanying map shows the railways over which the freight moved. While the table does not show the total volume of business moving between the stations, it does show a large part of the movement between most stations, and the average rates and ton-mile charges given are approximately those for the total movement. The table includes freight shipped on local billing, rebilling, and through billing. It includes carload and less than carload shipments. One important point of difference between the table of rail traffic and that of river traffic should be noted. The latter

<sup>1</sup> To obtain the statistics from some of the carriers, the writer found it necessary to compile the totals from the monthly statement "slips." A few important railways did not send statements because of the expense involved. The general auditor of one of the most important carriers between St. Louis and New Orleans said that as a good citizen he would like to aid the writer, but that the subject was not of sufficient financial interest to his company to justify the expense of making the statement. The officials of the railways in general showed considerable lack of interest in the subject. It seems to be the general opinion of the traffic officials that however much money may be spent on the waterway it will not greatly injure the railways.

includes freight received and discharged at all landings, while the former includes only the freight carried between the important



stations. The river statistics include the total of shipments and receipts both at the terminals and for intermediate points.

TABLE XIII

FREIGHT MOVEMENT PARALLEL TO THE PROPOSED WATERWAY VIA RAILWAYS SHOWN  
ON THE ACCOMPANYING MAP, CALENDAR YEAR 1909

	Weight (Tons)	Revenue (Dollars)	Rate* (Cents)	Distance (Miles)	Ton-Mile Charge (Mills)
BETWEEN CHICAGO AND PEORIA					
South bound.....	148,570	157,593	5	† 161	6.6
North bound.....	172,866	197,533	5	161	7.1
Totals.....	321,436	355,126	5	161	6.8
BETWEEN CHICAGO AND ST. LOUIS					
South bound.....	677,291	1,095,585	8	293	5.5
North bound.....	981,337	1,366,190	7	293	4.8
Totals.....	1,658,628	2,461,775	7	293	5.1
BETWEEN CHICAGO AND CAIRO					
South bound.....	20,112	42,066	10	364	5.7
North bound.....	37,862	82,349	11	364	6.7
Totals.....	57,974	124,415	11	364	5.8
BETWEEN CHICAGO AND MEMPHIS					
South bound.....	95,900	306,067	16	526	6.1
North bound.....	35,443	130,465	18	526	6.9
Totals.....	131,343	436,532	17	526	6.3
BETWEEN CHICAGO AND GREENVILLE, MISS.					
South bound.....	2,502	13,070	33	676	7.7
North bound.....	6,425	23,714	19	676	5.4
Totals.....	8,927	36,784	21	676	6.1
BETWEEN CHICAGO AND VICKSBURG, MISS.					
South bound.....	4,301	28,515	33	746	8.8
North bound.....	7,732	32,683	21	746	5.6
Totals.....	12,033	61,198	26	746	6.7

\* The rates are the average rates per hundred pounds, computed from the total weight and total revenue. Fractions of  $\frac{1}{2}$  cent and more are tabulated as an additional cent, those of less than  $\frac{1}{2}$  cent are disregarded.

† Distance via Chicago, Rock Island & Pacific Railway. Other distances given are via the Illinois Central Railroad.

TABLE XIII—*Continued*

	Weight (Tons)	Revenue (Dollars)	Rate (Cents)	Distance (Miles)	Ton-Mile Charge (Mills)
BETWEEN CHICAGO AND NATCHEZ, MISS.					
South bound.....	2,432	13,096	26	823	6.5
North bound.....	1,792	8,494	23	823	5.7
Totals.....	4,224	21,590	25	823	6.5
BETWEEN CHICAGO AND BATON ROUGE, LA.					
South bound.....	1,491	8,403	28	892	6.3
North bound.....	1,739	7,245	21	892	4.7
Totals.....	3,230	15,648	24	892	5.4
BETWEEN CHICAGO AND NEW ORLEANS					
South bound.....	77,919	353,735	23	981	4.5
North bound.....	192,416	1,018,700	26	981	5.4
Totals.....	270,335	1,372,435	25	981	5.3
BETWEEN ST. LOUIS AND MEMPHIS					
South bound.....	125,474	252,341	10	314	6.4
North bound.....	73,952	154,478	10	314	6.6
Totals.....	199,426	406,819	10	314	6.6
BETWEEN ST. LOUIS AND VICKSBURG, MISS.					
South bound.....	6,799	23,185	17	534	6.4
North bound.....	1,539	4,166	14	534	5.1
Totals.....	8,338	27,341	16	534	6.1
BETWEEN ST. LOUIS AND NEW ORLEANS					
South bound.....	141,880	560,426	20	769	5.1
North bound.....	310,202	1,129,135	18	769	4.7
Totals.....	452,082	1,689,561	19	769	4.9
BETWEEN MEMPHIS AND NEW ORLEANS					
South bound.....	221,237	506,196	11	455	5.
North bound.....	163,711	444,167	13	455	5.9
Totals.....	384,948	950,363	12	455	5.4

The average rate for the total volume of freight movement is a better test of the reasonableness or unreasonableness of rates than are the specific rates. Table XIII presents the average rates on the freight shipped in each direction and on the total in both directions between the most important towns and cities on the route. The rates south bound vary from 5 to 33 cents per hundred pounds, those north bound from 5 to 26 cents, and the averages for both directions from 5 to 26 cents per hundred pounds. From New Orleans, north bound, there is a large amount of high-class freight, consisting of bananas, oranges, lemons, limes, pineapples, and other tropical fruits; of domestic fruits and vegetables; and of imports. From Chicago and St. Louis the south-bound movement includes packing-house products and considerable high-class manufactures. In view of the class of freight moving in both directions it seems that the rates are at least reasonable, if not low; and they appear to be as low between Chicago and river points as between river points themselves. Indeed there are many factors other than river competition that affect the rate structure of the Mississippi Valley. Market competition and rail competition are as potent in reducing rates as water competition. And lake and rail competition between Chicago and the seaboard, in conjunction with the two factors just mentioned and river competition, have fixed rates in the Mississippi Valley at a very low figure.

The average charges per ton per mile vary from 4.5 mills to 8.8 mills on freight moving south bound; from 4.7 to 7.1, north bound; and from 4.9 to 6.8 on the total movement in both directions. The lowest charge is 4.5 mills on freight shipped from Chicago to New Orleans. The ton-mile charge from New Orleans to St. Louis and from Baton Rouge to Chicago is only 4.7 mills in both cases, and from St. Louis to Chicago it is only 4.8 mills. It is worth noting that the latter rate is less than the charge south bound between St. Louis and New Orleans, and that the average charge for both directions between Chicago and St. Louis is 5.1 mills, the same as the rate per ton-mile on shipments from St. Louis to New Orleans. Of course one would expect the lower rate for the longer distance, and on the river stretch where the channel is best; but the opposite is true. Therefore a waterway

between Chicago and St. Louis must be more efficient than the Mississippi River to cause a reduction in the rates between Chicago and St. Louis. The total ton-mile charge between Chicago and New Orleans is only 5.3 mills, scarcely more than 4.9 mills, the charge between St. Louis and New Orleans. Between Memphis and New Orleans the charge is 5.4 mills, and between Memphis and St. Louis it is 6.6 mills. The haul is comparatively long between the cities shown, and this should cause the rates to be lower than the average. On the other hand, the freight movement between these important cities consists quite largely of tropical fruits, manufactures, and other high-grade freight, and this should cause the rates to be higher than the average. Very little coal, stone, and other extremely low-grade freight moves over the long distances between the cities.

Certain other average charges per ton per mile are presented here that they may be compared with those given in the preceding table. Table XIV contains the charges per ton per mile between St. Louis and points on the Mississippi River below St. Louis as far as Vicksburg, Miss.

TABLE XIV

TON-MILE CHARGES IN MILLS ON CLASS FREIGHT BETWEEN ST. LOUIS AND CERTAIN OTHER POINTS ON THE MISSISSIPPI\*

BETWEEN ST. LOUIS AND	DISTANCE (Miles)	CLASSES									
		1	2	3	4	5	6	7	A	B and C	D
Cairo, Ill. . . . .	176	28	23	20	16	11	11	10	..	...	...
Columbus, Ky. . . . .	197	30	23	18	14	12	..	..	10	...	...
Hickman, Ky. . . . .	214	28	23	21	17	14	13	..	9	...	...
New Madrid, Mo. . . . .	252	32	23	21	17	14	..	..	15	...	...
Tiptonville, Tenn. . . . .	268	45	37	34	30	24	18	..	17	...	...
Gayoso, Mo. . . . .	291	33	26	23	19	16	..	..	17	...	...
Barfield, Ark. . . . .	318	30	24	21	17	14	..	..	15	...	...
Luxora and Osceola, Ark. . . . .	341	31	24	22	18	14	..	..	14	...	...
Memphis, Tenn. . . . .	421	23	18	16	13	11	09	06	..	5.2	4.8
Helena, Ark. . . . .	511	23	20	18	14	11	10	08	..	...	...
Vicksburg, Miss. . . . .	830	14	12	11	08	07	06	05	..	...	...

\* Annual Report of the Chief of Engineers, 1910, p. 1770.

The charges vary for the several classes between the points given, from 45 mills to 4.8 mills, and are much higher than the rail

charges tabulated above. No rates are made lower than Class A except between St. Louis and Memphis, and the lowest charge for that class is 9 mills.

Table XV shows certain ton-mile charges for comparison. The insurance charges are not included in the boat rates, and yet the rail rate of 5.15 mills in the Mississippi Valley, which virtually includes insurance for negligence, is not disparaged in comparison with even the lowest rate of any national waterway system, which does not include insurance. Moreover, the rail charge in the Mississippi Valley is lower than the rate on any national railway system.

TABLE XV

CHARGES PER TON PER MILE ON FREIGHT CARRIED BY RAIL IN THE MISSISSIPPI VALLEY COMPARED WITH CERTAIN OTHER TON-MILE CHARGES

Localities and Routes	Year	Mills
Rail carriers between Chicago and New Orleans.....	1909*	5.3
Rail carriers between all points in Mississippi Valley named on the map (p. 669), except the cities in parentheses.....	1909*	5.15
Rail carriers between Chicago and St. Louis.....	1909*	5.14
Entire system of the Illinois Central Railroad.....	1909†	6.46
Railways of the United States.....	1908†	7.54
Railways of the United States.....	1898	7.53
Railways of Russia (lowest rail rate in Europe).....	1905	9.61
National railways of Prussia.....	1899	12.78
Railways of France.....	1905	14.00
Waterways of Germany.....	1905	5.00
Waterways of France.....	1905	6.00

\* Calendar year. This is the average charge for the freight movement shown in Table XIII.

† Fiscal year.

Table XVI shows the average charge per ton per mile on certain commodities carried on the Rhine. Table XVII exhibits the ton-

TABLE XVI\*

TON-MILE CHARGES FOR CERTAIN COMMODITIES CARRIED ON THE RHINE FOR CERTAIN DISTANCES

Commodities	Points Connected	Miles	Rate in Cents	Rate in Mills
Cereals.....	Rotterdam to Manheim	337	75	2.08
Coal.....	Duisburg to Rotterdam	203	63	2.88
Coal.....	Duisburg to Manheim	135	25	1.88
Articles half manufactured.....	Ludwigshafen to Rotterdam	342	39	1.10

\* C. Colson, state councilor of France, and Louis Marlio, engineer of bridges and roads, Report No. 2, *On the Question of Railways and Waterways*; for the Railway Congress, 1909, advance sheets, p. 1138.

mile charges on certain commodities carried by the Illinois Central Railroad.

TABLE XVII

TON-MILE CHARGES ON GRAIN AND COAL CARRIED BY THE ILLINOIS CENTRAL RAILROAD

(The ton-mile charge was computed from the actual weight and charges for the month in which the largest shipment of each commodity was made except in the case of coal. This charge was computed from the published rate.)

COMMODITIES	POINT OF RECEIPT AND DISCHARGE	TON-MILE CHARGE	
		Mills*	Mills†
Corn.....	East St. Louis to New Orleans, Dec., 1909	2.92	1.76
Wheat.....	East St. Louis to New Orleans, Sept., 1909	2.83	1.71
Oats.....	East St. Louis to New Orleans, Sept., 1909	2.67	1.46
Corn.....	Argenta, Ill. (the largest shipping point not on a river), to New Orleans.....	2.89	....
Corn.....	Cisco, Ill. (the second shipping point in Central Ill.), to New Orleans	2.87	....
Coal.....	Carbondale, Ill., to Chicago	2.69	....

\* Based on rail distance.

† Based on river distance.

By comparing the rates in the two tables it may be seen that the rail rates in the Mississippi Valley are almost as low as the rates on the same commodities shipped via the Rhine. Here again no account is taken of insurance charges, which are largely to be reckoned a legitimate part of the river cost, when comparison is made with rail rates.

WILLIAM A. SHELTON

CHICAGO, ILL.

[To be continued]